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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): ABS-1280 US

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on Jan 26, 2007

Signature I Oman Reg No 43,779 for

Typed or printed name Kieun "Jenny" Sung

Application Number	Filed
10/690,805	October 21, 2003

First Named Inventor: PARK, Jheen-Hyeok

Art Unit	Examiner
2629	David Lee Lewis

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [X] attorney or agent of record. Registration number 48,639
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

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Telephone number

Jan 26, 2007
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

[X] *Total of 1 forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No.:	10/690,805	Confirmation No.:	9433
First Named Inventor:	Jheen-Hyeok Park	Art Unit:	2629
Filing Date:	October 21, 2003	Examiner:	David Lee Lewis
Attorney Docket No.:	ABS-1280 US (formerly 11909860-991280)		
Customer No.:	32605		

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Reg No 43,779

Kieun "Jenny" Sung

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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a response to the Office Action mailed on November 28, 2006, the statutorily shortened response period for which ends on February 28, 2006.

Listing of Claims as they were examined on or around November 28, 2006 begins on page 2 of this paper.

Remarks begin on page 5 of this paper.

In the Claims:

1. (Previously Presented) A liquid crystal display comprising:

a liquid crystal panel including a plurality of pixels including switching elements, a plurality of gate lines for transmitting gate signals to the switching elements, and a plurality of data lines for transmitting data voltages to the pixels;

a data driver including a plurality of data driving ICs connected to respective sets of the data lines, receiving image data, and applying the data voltages corresponding to the image data to the data lines; and

a gate driver applying the gate signals to the gate lines,

wherein the data driving ICs are supplied with a reference voltage, a ground voltage and a supply voltage and voltage levels of the image data swing with respect to the reference voltage lower than the supply voltage.

2. (Original) The liquid crystal display of claim 1, wherein the data driving ICs are mounted on the liquid crystal panel.

3. (Original) The liquid crystal display of claim 3, wherein the image data received by the data driver are first inputted into at least one of the data driving ICs and shifted to other data driving ICs.

4. (Original) The liquid crystal display of claim 3, wherein the data driving ICs include first and second sets of data driving ICs and the image data include first and second image data to be inputted into the first and the second sets of data driving ICs, respectively.

5. (Original) The liquid crystal display of claim 4, wherein each of the first and the second sets of data driving ICs includes one data driving IC receiving the image data from an external device.

6. (Original) The liquid crystal display of claim 5, wherein the image data for a data driving IC farther from the one data driving IC receiving the image data from the external device

precede the image data for a data driving IC closer to the one data driving IC receiving the image data from the external device.

7. (Original) The liquid crystal display of claim 1, further comprising a voltage generator for generating the reference voltage to be provided for the data driver and for generating voltages required for the gate signals to be provided for the gate driver.

8. (Original) The liquid crystal display of claim 7, wherein the voltage generator generates a plurality of gray voltages to be supplied to the data driver and to be selected as the data voltages.

9. (Original) The liquid crystal display of claim 1, wherein the reference voltage is inputted to the data driving ICs simultaneously.

10. (Original) The liquid crystal display of claim 1, wherein a signal line for transmitting the reference voltage is provided on the liquid crystal panel.

11. (Original) The liquid crystal display of claim 1, wherein the image data have a voltage swing level lower than a voltage swing level of a signal transmitted in TTL/CMOS (transistor-transistor logic / complementary metal oxide semiconductor) transmission.

12. (Original) The liquid crystal display of claim 1, wherein the gate driver includes a plurality of gate driving ICs connected to respective sets of gate lines.

13. (Previously Presented) A method of driving a liquid crystal display including a liquid crystal panel having a plurality of pixels, a plurality of gate lines, and a plurality of data lines, a data driver including a plurality of data driving ICs for supplying data voltages to the data lines, and a gate driver for supplying gate signals to the gate lines, the method comprising:

inputting the image data to at least one of the data driving ICs; and

shifting the image data to the data driving ICs,

wherein the data driving ICs are supplied with a reference voltage, a ground voltage and a supply voltage and voltage levels of the image data swing with respect to the reference voltage lower than the supply voltage.

14. (Original) The method of claim 13, wherein the shift direction of the image data is two.

15. (Original) The method of claim 13, wherein the image data has a voltage swing level lower than a voltage swing level of a signal transmitted in TTL/CMOS (transistor-transistor logic/complementary metal oxide semiconductor) transmission.

16. (Original) The method of claim 13, wherein the reference voltage is simultaneously inputted to the data driving ICs.

REMARKS

Claims 1-16 were pending when last examined, all of which stand rejected. Applicant requests reconsideration and allowance of all the pending claims based on the arguments set forth below.

Claim Rejections – 35 USC §103

Claims 1-16 are rejected under 35 USC 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0043100 to Moon ("Moon").

Independent Claim 1 is patentable over Moon at least because it recites that "... the data driving ICs are supplied with a reference voltage, a ground voltage and a supply voltage and voltage levels of the image data swing with respect to the reference voltage lower than the supply voltage."

Page 3 of the Office Action of November 28, 2006 ("the Office Action") admits that Moon is silent as to the data driving ICs being supplied with a reference voltage. However, the Office Action goes on to state that "Moon obviously provides for said reference voltage in view of voltage generator 6 providing gray voltage" and that "Said reference voltage would have been obvious to the skilled artisan in view of Moon' teaching of a first and second low voltage differential signals (LVDS) or reduced swing differential signals (RSDS)...." Applicants respectfully submit that the rejection is based on a misunderstanding as to the function of the "reference voltage" in the subject application, which is different from the function of what is referred to as the "reference voltage" in Moon.

Moon's "reference voltage" corresponds to the "common voltage" in the subject application. In paragraph [0031], Moon states that "The ... Von Voff Vcom generator 4 generates ... Vcom voltage as a reference voltage for the TFTs." This Vcom voltage, which is used to create an electric field in the liquid crystal layer and indicate the voltage level applied to a pixel in conjunction with the data voltage, is referred to as the "common voltage" in the subject application. For example, page 5, lines 20-22 of the application states, "The LC capacitor Clc is supplied with a data voltage and a common voltage ...." The function of the common voltage is well known in the art of liquid crystal displays.

The Office Action indicates that there is a reference voltage supplied by the voltage generator 6. However, the reference voltage that would be generated by the gray voltage generator is a voltage that is used to determine the polarity of the data signal that is applied to the pixel; namely, this is the "reference voltage" referred to in Moon, which is called the "common voltage" in the application. Page 3 of the Office Action describes what is claimed to be LVDS and RSDS but which is probably closer to a method of determining the polarity of a data signal using Vcom. For example, LVDS is a differential signaling system that encodes information based on different voltages transmitted between two wires with a resistor between them, and does not fit the description on page 3 of the Office Action. Thus, what the Examiner understood to be the "reference voltage" is in fact the reference voltage in Moon's paragraph [0031], or the "common voltage" in the subject application.

The subject application describes a method of transmitting data from the signal controller 40 to the data driving IC 20 in an efficient manner. The improved efficiency claimed in the application stems at least in part from the ability to determine the voltage levels of red, green, and blue image data by using the same reference voltage. The "reference voltage" of the invention is thus used to determine the magnitude and polarity of the image data for the red, green, and blue data, or multiple data. By avoiding the need to use separate reference voltages for red, green, and blue data, the transmission efficiency is improved. There is no teaching or suggestion in Moon to use the same reference voltage for different colored image data. Hence, there is nothing in Moon that corresponds to the "reference voltage" recited in Claim 1.

Furthermore, the Office Action fails to address why the reference voltage in Moon would be "lower than the supply voltage" as recited in Claim 1. As the reference voltage being lower than the supply voltage is a limitation of Claim 1, failure to address this limitation is a failure to establish the prima facie case of obviousness.

Dependent Claims 2-12 depend from Claim1 and are therefore patentable over Moon for at least the same reasons as Claim 1.

Dependent Claim 9 is patentable over Moon for the additional reason that it recites that "the reference voltage is inputted to the data driving ICs simultaneously." Moon, which is silent about providing the reference voltage to the data driving ICs, does not disclose or suggest that ***the reference voltage*** is provided simultaneously to the data driving ICs. Although the Office Action pointed to Moon's paragraphs 39-40 as disclosing the elements of Claim 9, the cited

paragraphs only discuss supplying the shift direction selecting signal. Moon supplies ***data signals*** concurrently from both sides of its plurality of driving ICs. Thus, its data signals may be supplied to more than one the data driving IC simultaneously. However, this does not automatically mean that the reference voltage is inputted to the data driving ICs simultaneously.

Independent Claim13 is patentable over Moon at least because it recites that "... the data driving ICs are supplied with a reference voltage, a ground voltage and a supply voltage and voltage levels of the image data swing with respect to the reference voltage ...." As explained above with respect to Claim 1, Moon does not teach or suggest supplying a reference voltage to its data driving ICs. The "reference voltage" the Office Action describes on page 3 in fact corresponds to the "common voltage" of the application.

Independent Claim 13 is also patentable over Moon because it recites that the reference voltage is "lower than the supply voltage." This is not taught or suggested by Moon, as explained above in reference to Claim 1. The Office Action fails to address why the reference voltage being lower than the supply voltage would be obvious, and thus fails to establish a prima facie case of obviousness.

Claims 14-16 depend from Claim 13 and are thus patentable over Moon for the same reasons as Claim 13.

Dependent Claim 16 is patentable over Moon for the additional reason that it recites that "the reference voltage is simultaneously inputted to the data driving ICs." As explained above in reference to Claim 9, Moon, at best, suggests that its ***data signals*** are inputted to the data driving ICs simultaneously. This does not mean, however, that the ***reference voltage*** is automatically inputted simultaneously to the data driving ICs.

For the foregoing reasons, Claims 1-16 are now in condition for allowance.

Please call the undersigned attorney at (408) 392-9250 if a telephone conversation would expedite the closing of prosecution for this case.

Respectfully Submitted,

/ Reg No. 43,779

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